EnviroTrac
Environmental Services

May 7, 2015

New Jersey Department of Environmental Protection
Central Water Compliance Enforcement
Attn: Mr. Bryan Barrett
Mail Code 44-03
401 E. State Street
Trenton, NJ 08625

Re: December 12, 2014 and January 23, 2015 Correspondence – Supplemental Information
Hess Corporation - Former Port Reading Complex
No.1 Landfarm Remediation Treatment System
750 Cliff Road
Woodbridge, Middlesex County, New Jersey 07077
NJDPES # NJG0225720; TWA # 14-0306;
Case Numbers 14-12-08-2230-40 and 15-01-16-1108-09

Dear Mr. Barrett:

On behalf of Hess Corporation (Hess), EnviroTrac Ltd. (EnviroTrac) is submitting this correspondence to provide supplemental information concerning the previously reported noncompliant discharges for the Port Reading Landfarm Leachate Treatment System. EnviroTrac respectfully requests an Affirmative Defense for the above-referenced Case Numbers. The basis for the Affirmative Defense is provided here-in.

Background:

Historically, leachate from the No.1 Landfarm was pumped to the Hess Advanced Wastewater Treatment Facility. Due to the pending shutdown of the wastewater treatment facility, a treatment system for the No.1 Landfarm was proposed, permitted and installed. The system began operating in October 2014.

The No.1 Landfarm treatment system was designed to remove low levels of dissolved metals, such as Arsenic and Nickel, and Total Suspended Solids, via physical filtration followed by *MetSorb*® for metals removal via adsorption. Leachate sample water from No.1 Landfarm and existing analytical data were provided to the vendor. Based on the *MetSorb*® design analysis, the installed media was anticipated to treat 2,000,000 gallons of leachate prior to metals breakthrough.

Total Organic Carbon (TOC) was not anticipated as a required sampling parameter. During the design phase, and working with the NJDEP regulators, it was decided that an individual permit was not required and that a B4B General Permit would be requested. The B4B carries with it the TOC sampling requirement which was not anticipated under the individual permit. TOC was first analyzed in the system effluent on October 29, 2014 and the analytical results indicated a TOC concentration of 6.2 milligrams per liter (mg/l).

Start-Up Upset:

November 2014 Non-compliance:

On December 8, 2014 EnviroTrac reviewed the effluent sampling analytical report for a sample collected November 11, 2014. As noted in the December 12, 2014 correspondence to the NJDEP, TOC exceeded the B4B permit requirements. The results indicated a TOC concentration of 43.4 mg/l, in excess of the permitted allowance of 20 mg/l.

December 2014 Non-compliance:

On January 15, 2015, EnviroTrac reviewed the effluent sampling analytical report for a sample collected December 30, 2014. As noted in the January 23, 2015 correspondence to the NJDEP, both TOC and Nickel exceeded the B4B permit requirements during the referenced sampling event. The results indicated Nickel and TOC concentrations of 348 micrograms per liter (µg/l) and 36.1 mg/l (respectively), which exceeded permit allowances. This breakthrough occurred with less than 300,000 gallons of leachate treated by the *MetSorb*®.

Hess Active Response:

1. System Shut-down: The treatment system has not discharged water since December 31, 2014 and is presently shut off pending a solution to resolve these noncompliance issues.

2. Media Replacement: The spent *MetSorb*® media has been replaced.

3. Analytical and Bench-Testing:
   A carbon treatability bench-scale test was conducted in December 2014. The results indicated that carbon is a potential media for TOC reduction. EnviroTrac also investigated the source of the TOC with Dr. Art Groves, N4 Licensed Operator, to identify potential treatment method(s). During the first system sampling in October 2014, TOC analysis on the system effluent indicated a concentration of only 6.2 mg/l. Additional analysis indicates that the leachate from No.1 Landfarm has TOC concentrations as high as 88 mg/l. Since TOC was estimated at 1 mg/l for the *MetSorb*® design analysis, it is likely the TOC is also sorbing to surface sites of the *MetSorb*® reducing the media effectiveness. In order to maintain the *MetSorb*® adsorption capacity, TOC should be reduced to 1 mg/l prior to the *MetSorb*®.

   Total Iron is not a required analysis for the treatment system and was not tested prior to the system start-up. Total Iron levels were estimated to be below 1 mg/l. However, during the *MetSorb*® change-out, the spent media was observed to have an orange color indicating Iron sorbed to the media surface, reducing the available space on the media for metal adsorption. On February 11, 2015, following the media change-out, the leachate was tested for both Total Iron and Dissolved Iron. Analytical results indicate Total Iron at 11.6 mg/l and Dissolved Iron at 1.44 mg/l. In order to maintain *MetSorb*® adsorption capacity, Iron should be reduced to 1 mg/l prior to the *MetSorb*®.

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In February 2015, an ozone/oxygen bench-scale treatability test was conducted. The results indicate that ozone was not effective at removing TOC at the levels tested, but provided enough oxygen for a large portion of the Iron to form iron oxides; allowing removal utilizing a 5 micron filter.

In order to provide additional data for system design, conducting a thirty-day onsite carbon pilot test is currently being assessed. It is anticipated that this test would define carbon effectiveness and vessel size requirements to treat the leachate for TOC as well as determining the required carbon change-out frequency.

4. System Start-up Protocol:

To help prevent future exceedances of Nickel or TOC, a new System Start-up Protocol has been established concerning system sampling for No.1 Landfarm. The System Start-up Protocol requires system sampling every two weeks for TOC and Iron from both the system influent sample port and the sample port prior to the *MetSorb*® vessels. Nickel is to be sampled every two weeks from the influent sample port and the sample port between the *MetSorb*® vessels. Sampling is only to be conducted during periods of continuous system operation.

Conclusion:

EnviroTrac respectfully requests an Affirmative Defense for process Upset during a remediation system start-up. EnviroTrac requests that the State consider the circumstances of the groundwater treatment system start-up, the completed and anticipated bench and analytical testing and the anticipated system improvements when reviewing the exceedances resulting from this Upset. It is requested that no penalty be assigned at this time. The Nickel exceedance was unanticipated due to interference of the treatment media from two untested sources (Iron and TOC) encountered during start-up.

- The system has not discharged since December 31, 2014.
- Hess is actively working on providing a solution for TOC and Iron removal in order to increase the effective life of the *MetSorb*®.
- System improvements are anticipated to be designed for and incorporated as soon as bench testing is complete and approved.
- System Start-up Protocol has been established.

Should you have any questions or comments regarding this report, please contact me at (609) 387-5553 or John Schenkewitz of Hess at (732) 750-6616.

Sincerely,

Jim Coyne, LSRP
Regional Operations Manager
NJDEP LSRP #587350

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Cc:
Phil Cole – NJDEP – Bureau of Case Management
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John Schenkewitz – Hess Corporation
Project File